

REVIEW

American Species of Amelanchier. By GEORGE NEVILLE JONES. Illinois Biological Monographs, Vol. XX, no. 2. Pp. 1-126. [Feb.] 1946. The University of Illinois Press, Urbana. \$1.50 paper, \$2.00 cloth.

This is a detailed account and analysis of some thousands of herbarium specimens and of the "nearly two hundred binomials and trinomials representing the species of *Amelanchier* in America." It is well illustrated with fourteen maps and twenty-three half-tone plates, the latter intended to show the usual leaf-shapes in the several species and also to illustrate the actual types or type material of critical entities. The paper is conveniently arranged, the style and typography are pleasing, the keys and descriptions are ample, and the citations of literature not only account for all synonymous names published in the genus but also include a multitude of references to *Amelanchier* names as used in floras and manuals and other technical and popular works. As Dr. Jones mildly says in his introduction, the species of *Amelanchier* are "sometimes somewhat difficult to distinguish," and his reduction of all the American members of the genus to eighteen species with distinctive geographical ranges will be welcomed alike by the amateur and professional botanist. Included in the paper are separate keys to flowering and fruiting material, a highly desirable feature in any treatment of a group of plants in which the individuals in flowering condition bear so little resemblance to the same plants in fruit and with mature foliage. The treatment of species is in general conservative, as may be imagined from the large number recognized by earlier authors but here reduced to synonymy. The author has gone over the literature on *Amelanchier* very thoroughly, and has put his species on a firm nomenclatural basis through study of the types wherever these are known to be extant.

A few minor errors and imperfections may be noted. What is evidently intended for a new species, *Amelanchier neglecta*, is proposed without either Latin description or reference to previous publication and so is not validly published. Specimens of *Amelanchier spicata* are cited from Alabama, but none from Georgia; the range of the species, as shown in map 7, includes two localities in Georgia but none in Alabama. In this connection it is worth noticing that the policy stated on page 12, that of citing only a part of the collections studied, may lead to confusion on the part of those using the monograph unless the mapping of ranges and the selective citation of specimens are carefully coordinated. Specimens of *Amelanchier laevis*, for example, are cited from Georgia from the extreme northern counties only. Map 4, however, indicates that the southernmost limit of this essentially Appalachian species is much further south, evidently well within

the limits of the Coastal Plain. On page 47 are cited specimens of *Amelanchier canadensis* collected at Franklin, Georgia, but map 6 does not indicate this extension of range; it shows instead a locality which is apparently near Rome, Georgia, a northwesterly range-extension which is not referred to in the citation of specimens.

An improvement might have been brought about in the paper by the inclusion of data obtained from several of the smaller, regional herbaria which have rich local collections, particularly in the southeastern United States and in the Rocky Mountain-Great Basin region. Where critical entities are involved, and especially when herbarium material from some areas is not generally available in large amounts in most collections, it seems unwise to lean so heavily on so few herbaria, even if they be as inclusive as those of Harvard University.

A change for the better might have been made in the lists of specimens examined, by citing county names in addition to the bare collectors' localities or, if space was at a premium, by citing the county names instead of the specific localities, at least for the eastern states. On page 56, for example, are cited specimens collected by [F. J.] Hermann at Portage Lake, Michigan. It so happens that this is not the large and well known Portage Lake in Houghton County, nor the smaller lake of the same name in Crawford County, but a still smaller body of water, omitted from ordinary maps, in Washtenaw County.

Most of us who have studied *Amelanchier* in the field and in the herbarium will agree that the number of species is relatively small. Unfortunately no one up to the present time has been able to explain clearly how to separate some of the critical species from their close relatives. It seems to me that this is the major fault of this monograph, that the author still does not offer convincing criteria by which the critical species may be delimited. *Amelanchier alnifolia* Nutt., for example, as defined by Dr. Jones, is common and widely distributed from Colorado and North Dakota westward and northwestward. *Amelanchier pumila* Nutt., which is dotted sparingly through a part of the same range, is distinguished in the keys on the sole basis of its complete lack of pubescence. Quite possibly it may be a valid species, and not merely a glabrous form of *A. alnifolia*, but from the descriptions and the photograph of Nuttall's specimen of *A. pumila* (Pl. IX, f. 2) it is evident that it is not very different from *A. alnifolia*, which is *almost* instead of *completely* glabrous; this hardly seems a convincing character on which to maintain a species.

An equivalent situation obtains in the northern Great Basin, particularly in northern and western Nevada, where a common *Amelanchier* has the permanently puberulent foliage of *A. utahensis* but the glabrous twigs and five styles of *A. alnifolia*, which is said not to occur in Nevada. Perhaps the two species are less sharply

separated in nature than the monograph would have us believe, or perhaps certain characters of pubescence and reduction in number of flower parts have been overemphasized. The obvious similarities which link all the amelanchiers of western North America seem far more worthy of recognition than do the rather trivial morphological differences among them. The author of this paper has chosen to take a positive stand by defining as species certain populations which are, truly enough, rather easily recognized and more or less geographically regionalized. These populations, however, are by no means always (or even often) to be sharply delimited; they may equally well be regarded as varieties or subspecies or ecospecies or some other units of a single highly variable species or, on the other hand, be divided into a score of species. If one is to establish what are essentially arbitrary limits for the species he has decided upon in this group, he must offer considerable justification for such a course.

In the introduction to this monograph the possibility of extensive hybridization in *Amelanchier* is dismissed rather impatiently. Presumably this is a subject for judgment by a geneticist, but even to a lay observer there are suggestions of hybridity in some groups of the genus. In the Maryland woods here at the edge of the Coastal Plain there are apparently two species of shrubby amelanchiers with small flowers. One is a low shrub flowering perhaps a week before its somewhat larger associate. According to Jones' key it is evident that these plants must be either *A. canadensis* or *A. spicata*. Unfortunately not all plants fall clearly into one species or the other. In a random selection from a series of shrubs may be found all possible combinations of the characters of style-fusion and ovary-pubescence used in the key. Very probably the plants really represent two species, but if so their distinctive characters seem to have become rather tangled. Unlike the "species" of western North America, many of these plants of the eastern states are distinctive in habit and appearance as well as in flowering season, and apparently this is not a case of intergrading populations but of different plants which have been insufficiently studied.

In the same patch of woods mentioned above are numerous plants of the large-flowered amelanchiers which are truly arborescent. Some are woolly-leaved while in flower (a character of *A. arborea*) while others have reddish and almost glabrous leaves (as in *A. laevis*). The broad sepals of *A. arborea*, however, may be found associated with either type of pubescence, as may the glabrous racemes of *A. laevis*. It is not at all clear from examination of these individuals whether *A. arborea* and *A. laevis* represent two species, or simply races of one and the same species, or whether the puzzling intermediates have resulted from hybridization or in some other manner.

The two preceding examples are enough to suggest, at least,

that we know too little about the genetical behavior of *Amelanchier*. Perhaps the problems involved are insoluble, but at least they deserve consideration. The members of the Rosaceae, including the Pomoideae, are noted for their sexual irregularities and other reproductive anomalies. Whether due to hybridism, peculiar chromosome distribution, polyploidy, or parthenogenesis, to combinations of these, or to other factors, the multiplicity of forms in *Amelanchier* (as also in *Crataegus*, *Malus*, *Rubus* and other genera), is so great as to defy taxonomy based on herbarium material alone. I think we shall not arrive at any very satisfactory scheme of classification of these genera until we know more about their genetical peculiarities. Studies of these will not be easy, for, in growing these long-lived woody species, mature fertile seedlings of known parentage are not quickly obtained, but experimental studies of seedling populations should without fail form the basis of any future attempts to reduce the species of the Pomoideae to a tangible system. The present monograph will serve as a morphological and geographical basis for future work on *Amelanchier*.—ROGERS McVAUGH, Plant Industry Station, U. S. Department of Agriculture, Beltsville, Maryland.

NOTES AND NEWS

Dr. G. L. Stebbins, Jr., Associate Professor of Genetics, University of California, Berkeley, is absent on sabbatical leave until January, 1947. During the autumn he will deliver the Jessup Lectures on Evolution at Columbia University. These lectures will be published subsequently in book form.

As a member of an expedition sent out under the auspices of the United States Commercial Corporation, Dr. F. Ray Fosberg is exploring for plants in Micronesia.

At the invitation of the Ministerio de Educacion Nacional de Colombia, T. Harper Goodspeed, Professor of Botany, University of California, Berkeley, left on July 4 to give a series of lectures at Bogotá and Medellín. He will return to Berkeley in time for the fall semester.

The following recent appointments have come to our attention: Daniel I. Axelrod as Assistant Professor of Geology, University of California, Los Angeles; Charles B. Heiser, Jr., as Instructor in Botany, University of California, Davis; John L. Morrison as Instructor in Botany, New York State College of Forestry, Syracuse University, New York; Robert M. Muir as Instructor in Botany at Pomona College, Claremont, California.